

IN THE CLAIMS:

Please amend the claims as shown below, in which insertions are indicated by underline and deletions are indicated with strikethrough or by double brackets. Please add new claim 24 shown below. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Withdrawn) A metal material comprising a diffusion layer containing a Cu-Zn alloy or a Cu-Mn alloy formed by diffusing at least any one of Cu and Mn in a base material of a Zn alloy,

wherein said Cu or Mn is diffused from a surface to inside of said base material to a depth of not less than 0.5 mm; and

a concentration of said Cu or Mn is gradually decreased from said surface to said inside of said base material.

2. (Withdrawn) A metal material comprising a diffusion layer containing a Fe-Cr alloy formed by diffusing Cr in a base material of a Fe alloy, chromium carbonitride being produced on a surface of said base material,

wherein said Cr is diffused from said surface to inside of said base material to a depth of not less than 0.5 mm; and

a concentration of said Cr is gradually decreased from said surface to said inside of said base material.

3. (Withdrawn) A metal material comprising a diffusion layer containing a Ti-Al alloy, a Ti-Cr alloy, a Ti-Ni alloy or TiN formed by diffusing at least any one of Al, Cr, Ni and N in a base material of a Ti alloy, a nitride of any one of Al, Cr and Ni being produced on a surface of said base material,

wherein said any one of Al, Cr, Ni and N is diffused from said surface to inside of said

base material to a depth of not less than 0.5 mm; and

a concentration of said any one of Al, Cr, Ni and N is gradually decreased from said surface to said inside of said base material.

4. (Withdrawn) A metal material comprising a diffusion layer containing a Cu-Ni alloy formed by diffusing Ni in a base material of a Cu alloy,

wherein said Ni is diffused from a surface to inside of said base material to a depth of not less than 0.5 mm; and

a concentration of said Ni is gradually decreased from said surface to said inside of said base material.

5-6. (Canceled)

7. (Withdrawn) The metal material according to claim 1, wherein said diffusion layer further contains at least one of iron, nickel, chromium, molybdenum, cobalt, and ceramics.

8. (Withdrawn) The metal material according to claim 1, further comprising an Fe alloy layer disposed on a surface of said diffusion layer.

9. (Currently amended) A method of producing a metal material comprising a diffusion layer which is formed by diffusing an element into a base material of a metal and which has a depth from a surface of said base material of not less than 0.5 mm, a concentration of said element being gradually decreased from said surface to inside of said base material, said method comprising:

coating said surface of said base material with a coating agent, said coating agent including consisting essentially of a powder of a substance containing said element to be diffused, ~~said coating agent further including~~ a reducing agent for reducing an oxide film formed

on said surface of said base material, and a solvent in which said powder of said substance and said reducing agent ~~being~~ are dispersed or dissolved ~~in a solvent~~; and

diffusing said element into said base material by heating said base material which is coated with said substance such that the element is diffused into the base material to a depth of not less than 0.5 mm from the surface, wherein

said diffusing step causes the concentration of said element to be gradually decreased from said surface to inside of said base material such that an interface is not formed between the base metal material and the diffusion layer, and

the surface of the base metal material having the element diffused therein is exposed outwardly after said diffusion step.

10. (Canceled)

11. (Previously presented) The method of producing said metal material according to claim 9, wherein said base material comprises a Zn alloy, and wherein a resin of at least one of nitrocellulose, polyvinyl alcohol, polyvinyl, acrylic, melamine, styrene, and phenol is used as said reducing agent.

12. (Previously presented) The method of producing said metal material according to claim 11, wherein said coating agent further contains at least one metal powder of magnesium, aluminum, or manganese, or at least one alloy powder of a magnesium alloy, an aluminum alloy, and a manganese alloy.

13. (Previously presented) The method of producing said metal material according to claim 9, wherein said base material is heated such that a temperature gradient is formed in said diffusing step.

14. (Previously presented) The method of producing said metal material according to claim 9, wherein said diffusing step is carried out in an inert gas atmosphere.

15. (Currently amended) ~~The method of producing said metal material according to claim 9~~
A method of producing a metal material comprising a diffusion layer which is formed by diffusing an element into a base material of a metal and which has a depth from a surface of said base material of not less than 0.5 mm, a concentration of said element being gradually decreased from said surface to inside of said base material, said method comprising:
coating said surface of said base material with a coating agent, said coating agent including a powder of a substance containing said element to be diffused, said coating agent further including a reducing agent for reducing an oxide film formed on said surface of said base material, and said powder of said substance and said reducing agent being dispersed or dissolved in a solvent; and
diffusing said element into said base material by heating said base material which is coated with said substance,

wherein a Zn alloy is used as said base material, at least a part of said base material is coated with a first powder containing at least any one of copper and manganese, and then the base material having said powder with at least one of copper and manganese coated thereon is coated with a second powder containing Fe in said coating step.

16. (Currently amended) The method of producing said metal material according to claim 12, wherein at least one ~~selected from~~ of Ni, Sn, and Cu, is further added to said coating agent.

17. (Withdrawn) A method of producing a metal material comprising a diffusion layer which contains an Fe-Cr alloy formed by diffusing Cr into a base material of an Fe alloy and which has a depth from a surface of said base material of not less than 0.5 mm, a concentration of said Cr being gradually decreased from said surface to inside of said base material, said method comprising:

coating said surface of said base material with a coating agent, said coating agent including a mixed powder of Cr, Mo, Ni, C and BN, and said powder being dispersed or dissolved in a solvent; and

diffusing said Cr into said base material by heating said base material which is coated with said coating agent in said solvent.

18. (Withdrawn) A method of producing a metal material comprising a diffusion layer which contains a Ti-Al alloy, a Ti-Cr alloy, a Ti-Ni alloy or TiN formed by diffusing at least any one of Al, Cr, Ni and N into a base material of a Ti alloy and which has a depth from a surface of said base material of not less than 0.5 mm, a concentration of at least any one of Al, Cr, Ni and N being gradually decreased from said surface to inside of said base material, said method comprising:

coating said surface of said base material with a coating agent, said coating agent including a mixed powder of Al, Cr, Ni, C and BN, and said powder being dispersed or dissolved in a solvent; and

diffusing at least any one of Al, Cr, Ni, C and N into said base material by heating said base material which is coated with said coating agent in said solvent.

19. (Withdrawn) A method of producing a metal material comprising a diffusion layer which is formed by diffusing an element into a base material of a metal and which has a depth from a surface of said base material of not less than 0.5 mm, a concentration of said element being gradually decreased from said surface to inside of said base material, said method comprising:

adding at least one of copper and manganese as a seeding agent to a molten metal when casting is performed by using said molten metal of Zn or a Zn alloy.

20. (Withdrawn) The method of producing said metal material according to claim 19,

wherein said casting is started 10 to 30 seconds after said seeding agent is added to said molten metal.

21. (Withdrawn) The method of producing said metal material according to claim 19 or 20, wherein said at least one of copper and manganese is an added powder having a particle size of 10 μm to 50 μm .

22. (Withdrawn) The method of producing said metal material according to claim 19, wherein copper is added as the seeding agent, and said copper is seeded in an amount of 1 % by weight to 18 % by weight of an entire amount of said Zn or said Zn alloy.

23. (Withdrawn) The method of producing said metal material according to claim 19, wherein manganese is added as the seeding agent, and said manganese is seeded in an amount of 3 % by weight to 30 % by weight of said seeding agent.

24. (New) The method of producing said metal material according to claim 9, wherein the reducing agent is decomposed by the heating in said diffusing step, and a product of decomposition causes the oxide film on the surface of the base material to disappear by reduction so that the element is diffused into the base material.